DETAILED ACTION

Response to Amendment

1. Receipt of Applicant's Amendment filed 08/13/09 is acknowledged.

EXAMINER'S AMENDMENT

2. Authorization for this examiner's amendment was given in a telephone interview with Mr. Anthony F. Bonner, Jr. (RN 55,012) on October 20, 2009.

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

1.   (Currently Amended) A data management system comprising:

a plurality of storage devices individually comprising a physical storage space, wherein the physical storage space of ~~one~~ a first storage device of the plurality of storage devices is configured to store a baseline version of a data object and the physical storage space of ~~an other~~ a second storage device of the plurality of storage devices is configured to store at least one of a plurality of delta versions of the data object in response to a determination that available storage space on at least one of the plurality of storage devices does not currently exist with respect to predefined storage limits; and

processing circuitry configured to control storage operations of at least one of the
plurality of storage devices to process a restore request with respect to the data object,
to access the delta versions from the ~~other~~ second storage device of the plurality of
storage devices responsive to the restore request, wherein accessing the delta
versions includes querying a tracking database of a cell manager to obtain data
indicating storage locations of the delta versions, and to initiate communication of data
of the baseline version and the delta versions of the data object to a computer system,
wherein the processing circuitry is further configured to act as a proxy to extract remotely
stored delta versions, wherein restoring the data object includes combining the baseline
version of the data object with the remote delta versions of the delta object.

2.   (Canceled)

3.   (Currently Amended) The data management system of ~~claim 1~~ claim 1, wherein
a client agent of the computer system is configured to combine the delta versions with
the baseline version to provide a restored version of the data object.

4.   (Currently Amended) The data management system of ~~claim 1~~ claim 1, wherein
the processing circuitry comprises processing circuitry of the ~~one~~ first storage device of
the plurality of storage devices which stores the baseline version of the data object.

5.   (Currently Amended) The data management system of ~~claim 4~~ claim 4, wherein
the ~~one~~ the first storage device of the plurality of storage devices is configured to receive

at least one of the delta versions from the computer system, and the processing circuitry is configured to forward the at least one of the delta versions to the ~~other~~ second storage device of the plurality of storage devices.

6.   (Currently Amended) The data management system of ~~claim 5~~ claim 5, wherein the processing circuitry is configured to forward the at least one of the delta versions to the ~~other~~ second storage device of the plurality of storage devices responsive to a status of capacity of the ~~one~~ first storage device of the plurality of storage devices.

7.   (Currently Amended) The data management system of ~~claim 5~~ claim 5, further comprising a database configured to store information regarding storage operations of ~~individual ones~~ each of the plurality of storage devices, and wherein the processing circuitry is configured to access the database to obtain a location of the at least one of the delta versions of the data object on the ~~other~~ second storage device of the plurality of storage ~~device~~ devices responsive to the restore request.

8.   (Currently Amended) The data management system of ~~claim 1~~ claim 1, wherein the processing circuitry comprises processing circuitry of a client agent associated with the computer system.

9.   (Currently Amended) The data management system of ~~claim 1~~ claim 1, further comprising a local area network configured to communicate at least one of the delta versions intermediate the ~~one~~ first storage device of the plurality of storage devices and

the ~~other~~ second storage device of the plurality of storage devices.

10.   (Currently Amended) The data management system of ~~claim 1~~ claim 1, further comprising a storage area network configured to communicate at least one of the delta versions, intermediate the ~~one~~ first storage device of the plurality of storage devices and the ~~other~~ second storage device of the plurality of storage devices.

11.   (Currently Amended) A data management system comprising:

a hardware memory component;

a plurality of storage subsystems;

~~a plurality of storage subsystem means individually comprising physical~~ storage means for storing data corresponding to a plurality of data ~~objects and~~ objects;

processing means for controlling storage operations with respect to the ~~respective physical storage means;~~ hardware memory component; and

database means for tracking storage locations of data of the data objects in the corresponding ~~ones of the~~ plurality of storage ~~subsystem means;~~ subsystems;

wherein the processing means of ~~one~~ a first subsystem of the plurality of storage ~~subsystem means comprises~~ subsystems includes means for controlling the storage of a baseline version of a data object using the ~~respective physical~~ storage means corresponding to the ~~one~~ first subsystem of the plurality of storage ~~subsystem means~~ subsystems and means for initiating the storage of a delta version of the data object using ~~an~~ ~~other~~ a second subsystem of the plurality of storage ~~subsystem means;~~ subsystems;

wherein the database means comprises means for storing information regarding the storage location of the delta version using the ~~other~~ second subsystem of the plurality of storage ~~subsystem means;~~ subsystems; and

wherein the processing means outputs the delta version to the ~~other~~ second subsystem of the plurality of storage ~~subsystem means~~ subsystems after determining that insufficient storage capacity exists at the ~~one~~ first subsystem of the plurality of storage ~~subsystem means~~ subsystems to store the delta version, wherein the processing means is further configured to verify storage of the baseline version of data with a manager means for tracking purposes using the database means, wherein the processing means is further configured to query a tracking database of a cell manager to obtain data indicating storage locations for the delta version.

12.   (Currently Amended) The data management system of ~~claim 11~~ claim 11, wherein the processing means of the ~~other~~ second subsystem of the plurality of storage ~~subsystem means~~ subsystems comprises means for uncompressing data of the delta version, and means for initiating communication of the uncompressed data of the delta version to the ~~one~~ first storage subsystem of the plurality of storage ~~subsystem means.~~ subsystems.

13.   (Currently Amended) The data management system of ~~claim 11~~ claim 11, wherein the processing means for the ~~one~~ first subsystem of the plurality of storage ~~subsystem means~~ subsystems comprises means for accessing the database, and means for forwarding a request to the ~~other~~ second subsystem of the plurality of

storage ~~subsystem means~~ subsystems to obtain the delta version from the ~~other~~

second subsystem of the plurality of storage ~~subsystem means~~ subsystems responsive

to the accessing the database.

14.   (Currently Amended) The data management system of ~~claim 11~~ claim 11,

wherein the processing means for the ~~one~~ first subsystem of the plurality of storage

~~subsystem means~~ subsystems comprises means for generating a restored version of

the data object using the baseline version and the delta version, and means for

outputting the restored version of the data object to a computer system.

15.   (Currently Amended) A data management system storage device comprising:

        an interface configured to communicate data with respect to other storage

devices of a data management system, and to communicate data of a data object with

respect to a computer system;

        a physical storage space configured to store a baseline version of the data object

at an initial moment in time; and

        processing circuitry configured to receive a request to store a delta version of the

data object at a subsequent moment in time after the initial moment in time, to obtain

information regarding a capacity of ~~the~~ a storage device, and to initiate storage of the

delta version of the data object using one of the other storage devices of the data

management system responsive to an analysis of the obtained information, wherein the

processing circuitry outputs the delta version to the one of the other storage devices

after determining that insufficient storage capacity exists at the storage ~~devices~~ device

to store the delta version, the processing circuitry being further configured to verify

storage of the baseline version of the data object with a cell manager for tracking

purposes using a tracking database, the processing circuitry further configured to

query a tracking database of the cell manager to obtain data indicating storage

locations of the delta version.

16.   (Currently Amended) The data management system storage device of ~~claim 15~~

claim 15, wherein the processing circuitry is configured to access the tracking database

to identify a storage location of the delta version, and to output a request to access the

delta version to the other ~~of the~~ storage devices responsive to the accessing the

tracking database.

17.   (Currently Amended) The data management system storage device of ~~claim 15~~

claim 15, wherein the processing circuitry is configured to combine the delta version

with the baseline version to generate a restored version of the data object and to control

communicating of the restored version of the data object to the computer system.

18.   (Currently Amended) The data management system storage device of ~~claim 15~~

claim 15, wherein the processing circuitry is configured to initiate the storage using the

other ~~of the~~ storage devices responsive to the obtained information indicating

insufficient capacity to accommodate storage of the delta version.

19.   (Currently Amended) A computer-readable storage medium that stores a program that, when executed by a computer, causes processing circuitry of ~~one~~ a first storage device of a plurality of storage devices of a data management system to:

receive a request to store a baseline version of a data object;

store the baseline version using physical storage space of the ~~one~~ the first storage device of the plurality of storage devices;

receive a request to store a delta version of the data object after effecting storage of the baseline version;

access information regarding a storage capacity status of the ~~one~~ first storage device of the plurality of storage devices;

determine the ~~one~~ first storage device of the plurality of storage devices has insufficient storage capacity to store the delta version;

store the delta version using ~~an other~~ a second storage device of the plurality of storage devices of the data management system after determining that the ~~one~~ storage device of the plurality of storage devices has insufficient storage capacity to store the delta version; and

verify storage of the baseline version of the data object with a cell manager for tracking purposes using a tracking database, wherein the processing circuitry is further configured to query the tracking database of the cell manager to obtain data indicating storage locations of the stored delta version.

20.   (Currently Amended) The computer-readable storage medium of ~~claim 19~~ claim 19, wherein the program is configured to cause the processing circuitry to access the

delta version stored using the ~~other~~ second storage device of the plurality of storage

devices, and to control communication of data of the baseline version and the delta

version to a computer system.

21.   (Currently Amended) The computer-readable storage medium of ~~claim 20~~ claim

20, wherein the program is configured to cause the processing circuitry to combine the

delta version and the baseline version before the communication.

22.   (Currently Amended) The computer-readable storage medium of ~~claim 19~~ claim

19, wherein the program is configured to cause the processing circuitry to initiate the

storage responsive to the accessed information indicating insufficient capacity of the

~~one~~ first storage device of the plurality of storage devices to accommodate storage

of the delta version.

23.   (Currently Amended) A data management method comprising:

        receiving a baseline version of a data object of a computer system using ~~one~~ a

first storage device of a plurality of storage devices of a data management system;

        storing the baseline version using ~~one~~ the first storage device of the plurality of

storage devices after the reception of the baseline version:

        receiving a request using the ~~one~~ first storage device of the plurality of storage

devices, wherein the request comprises a request to store a delta version of the

baseline version;

analyzing a capacity of the ~~one~~ first storage device of the plurality of storage

devices;

determining the ~~one~~ first storage device of the plurality of storage devices has

insufficient storage capacity to store the delta version;

storing the delta version using ~~an other~~ a second storage device of the plurality

of storage devices after determining that the ~~one~~ first storage device of the plurality of

storage devices has insufficient storage capacity to store the delta version;

verifying storage of the baseline version of the data object with a cell

manager for tracking purposes using a tracking database; and

processing a restore request, wherein processing the restore request

includes querying the tracking database of the cell manager to obtain data

indicating storage locations of the delta version.

24.   (Currently Amended) The data management method of ~~claim 23~~ claim 23, further

comprising combining the delta version with the baseline version providing a restored

version of the data object.

25.   (Currently Amended) The data management method of ~~claim 24~~ claim 24,

wherein the combining comprises combining using the ~~one~~ first storage device of the

plurality of storage devices.

26.   (Currently Amended) The data management method of ~~claim 24~~ claim 24, wherein the combining comprises combining using a client agent of the computer system.

27.   (Currently Amended) The data management method of ~~claim 24~~ claim 24, further comprising maintaining a database of a stored location of the delta version, and wherein the combining comprises accessing the database using the ~~one~~ first storage device of the plurality of storage devices to identify the stored location of the delta version.

28.   (Currently Amended) The data management method of ~~claim 27~~ claim 27, further comprising: outputting a request from the ~~one~~ first storage device of the plurality of storage devices to the ~~other~~ second storage device of the plurality of storage devices responsive to the identification of the stored location; and communicating the delta version from the other of the plurality of storage devices to the ~~one~~ first storage device of the plurality of storage devices responsive to the request.

29.   (Currently Amended) The data management method of ~~claim 23~~ claim 23, further comprising forwarding the delta version from the ~~one~~ first storage device of the plurality of storage devices to the ~~other~~ second storage device of the plurality of storage devices.

30.   (Currently Amended) The data management method of ~~claim 29~~ claim 29, wherein the forwarding comprises forwarding responsive to the determining that an insufficient capacity of the ~~one~~ first storage device of the plurality of storage devices exists.

31.   (Currently Amended) The data management system of ~~claim 1~~ claim 1, wherein the computer system is a host device external of the data management system.

32.   (Currently Amended) The data management system of ~~claim 1~~ claim 1, wherein the computer system, is a host device external of the data management system and the computer system is configured to execute an application program to generate the baseline and delta versions of the data object.

33.   (Currently Amended) The data management system of ~~claim 1~~ claim 1, wherein the data object comprises a data file.

34.   (Currently Amended) The data management system of ~~claim 1~~ claim 1, wherein the data object comprises a data file and the delta version of the data file only comprises changes made to the baseline version of the data file.

35.   (Currently Amended) The data management system of ~~claim 34~~ claim 34, wherein the delta version of the data file does not include content of the data file which is unchanged with respect to the baseline version of the data file.

36.   (Currently Amended) The data management system storage device of ~~claim 15~~ claim 15, wherein the processing circuitry is configured to obtain the information regarding the capacity of the storage device responsive to the request.

37.   (Currently Amended) The computer-readable storage medium of ~~claim 19~~ claim 19, wherein the program further ~~causing~~ causes the processing circuitry of the ~~one~~ first storage device of the plurality of storage devices to access the information regarding the status comprising capacity information of the ~~one~~ first storage device of the plurality of storage devices responsive to receiving the request to store the delta version, and wherein the initiation of the storage of the delta version responsive to analysis of the capacity information.

38.   (Currently Amended) The computer-readable storage medium of ~~claim 19~~ claim 19, wherein initiating the storage of the delta version using the ~~other~~ second storage device of the plurality of storage devices responsive to the information includes indicating that the ~~one~~ first storage device of the plurality of storage devices has insufficient capacity to store the delta version.

39.   (Currently Amended) The computer-readable storage medium of ~~claim 19~~ claim 19, wherein the program further ~~causing~~ causes the processing circuitry of the ~~one~~ first storage device of the plurality of storage devices to initiate the storage of the delta

version using the ~~other~~ <u>second storage device</u> of the <u>plurality of</u> storage devices to provide increased storage capacity of the data management system.

40. – 41. (Canceled)

42.   (Currently Presented) The data management system of claim 1, further comprising a client agent of a target computer configured to receive a restored data object.

Allowable Subject Matter

3. Claims 1, 3-39 and 42 are allowed and are renumbered as 1-39.

The following is an examiner's statement of reasons for allowance: Claims 1, 3-39 and 42 are allowable because the prior art made of record does not teach or fairly suggest the combination of elements as recited in independent Claims 1, 11, 15, 19 and 23.

Specifically, the prior art of record does not teach:

*   wherein the physical storage space of a first storage device of the plurality of storage devices is configured to store a baseline version of a data object and the physical storage space of a second storage device of the plurality of storage devices is configured to store at least one of a plurality of delta versions of the data object in response to a determination that available storage space on at least one of the plurality of storage devices does not currently exist with respect to predefined storage limits taken with all other limitations as recited in Claim 1.

- wherein the processing means outputs the delta version to the second subsystem of the plurality of storage subsystems after determining that insufficient storage capacity exists at the first subsystem of the plurality of storage subsystems to store the delta version, wherein the processing means is further configured to verify storage of the baseline version of data with a manager means for tracking purposes using the database means, wherein the processing means is further configured to query a tracking database of a cell manager to obtain data indicating storage locations for the delta version taken with all other limitations as recited in Claim 11.

- wherein the processing circuitry outputs the delta version to the one of the other storage devices after determining that insufficient storage capacity exists at the storage device to store the delta version, the processing circuitry being further configured to verify storage of the baseline version of the data object with a cell manager for tracking purposes using a tracking database, the processing circuitry further configured to query a tracking database of the cell manager to obtain data indicating storage locations of the delta version taken with all other limitations as recited in Claim 15.

- store the delta version using a second storage device of the plurality of storage devices of the data management system after determining that the storage device of the plurality of storage devices has insufficient storage capacity to store the delta version; and verify storage of the baseline version of the data object with a cell manager for tracking purposes using a tracking database, wherein the processing circuitry is further configured to query the tracking database of the

cell manager to obtain data indicating storage locations of the stored delta version taken with all other limitations as recited in Claim 19.

* storing the delta version using a second storage device of the plurality of storage devices after determining that the first storage device of the plurality of storage devices has insufficient storage capacity to store the delta version; verifying storage of the baseline version of the data object with a cell manager for tracking purposes using a tracking database; and processing a restore request, wherein processing the restore request includes querying the tracking database of the cell manager to obtain data indicating storage locations of the delta version taken with all other limitations as recited in Claim 23.

The dependent claims being definite, further limiting and fully enabled by the Specification are also allowed.

These features, together with the other limitations of the independent claim are novel and non-obvious over the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Remarks

4. Claims 19-22 and 37-39 recite "computer-readable storage medium", wherein the Office considers the term "medium" as excluding carrier wave, signal, transmission

media, or any form of energy, such that the claims clearly fall within a statutory class of invention as required under the terms of 35 U.S.C. 101.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh-Ha Dang whose telephone number is 571-272-4033. The examiner can normally be reached on Monday-Friday from 9:00 AM to 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on 571-272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Thanh-Ha Dang
Examiner, AU 2163
October 21, 2009

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